

CONFERENCES - CRYPTOGAMIC

**CRYPTOGAMIC SOCIETY**  
**OF**  
**SCOTLAND.**

---

**FORTY-THIRD**  
**Annual Conference**  
**THORNHILL.**

---

**- 1924 -**

---

**SALTCOATS:**  
**PRINTED BY A. WALLACE & SON, DOCKHEAD STREET.**

conf/1924 THO



# CRYPTOGAMIC SOCIETY

OF

## SCOTLAND.

---

FORTY-THIRD

# Annual Conference

THORNHILL.

---

- 1924 -

---

SALTCOATS:

PRINTED BY A. WALLACE & SON, DOCKHEAD STREET.

CAS INTERNATIONAL  
MYCOLOGICAL INSTITUTE  
LIBRARY

Im\CONF/1924 THO





## Cryptogamic Society of Scotland.

---

THE Forty-third Annual Conference of the Society was held at Thornhill, Dumfriesshire, on the 23rd, 24th, and 25th September, 1924. The headquarters were at the Buccleuch and Quensberry Arms Hotel, where a room was placed at the disposal of the Society for discussions and for the display of specimens gathered at the forays.

On Monday, 22nd September, when the members arrived, the evening was fine. After tea, some of the party went for a stroll, and noted several species of fungi, but nothing of special importance was observed.

On Tuesday, 23rd September, the foray was at Black Nest Wood, close to the golf course, and within easy walking distance. Although the morning was very wet, the party set out prepared for any emergency, and made as close a search as was possible under the disagreeable conditions which then prevailed. A fair number of species was recorded, among which were *Collybia esculenta*, *Mycena pullata*, *M. corticola*, *Leptonia serrulata*, *Polyporus hispidus*, and *Tremellodon gelatinosum*.

On Wednesday, 24th September, the Society visited Mallyford Wood, at Drumlanrig. The day was beautiful; but previous rains had rendered the undergrowth drenched with water, and search, especially among the microfungi, was therefore very difficult. About 80 species were noted, the most interesting being *Armillaria mucida*, *Clitocybe inversa*, *Exidia glandulosa*, *Clavaria argillacea*, and *Pistillaria puberula*.

On Thursday, 25th September, the Society drove out to Capenoch House, near Penpont, where a most enjoyable day was spent. Fungi, however, were not very abundant, and only some 70 species were recorded. Among the most notable were

*Tricholoma resplendens*, *Collybia tuberosa*, and *Panus stypticus*. Before leaving the policies, the members were kindly invited by Mr. and Mrs. Hugh Gladstone into the house, where tea was served, and afterwards an opportunity was afforded for viewing the library, which contains many rare books on birds.

The larger fungi were not numerous in the woods visited on any of the three days; and this, no doubt, was due to the cold and wet weather which had been experienced during the summer months.

The Annual Business Meeting of the Society was held on Wednesday evening, and was attended by all the members who were present at the Conference. The usual reports were submitted and approved. Office-bearers for 1925 were appointed as follows:—*President*, The Very Rev. David Paul, D.D., LL.D.; *Vice-President*, Dr. Malcolm Wilson, D.Sc., A.R.C.S., F.L.S.; *Hon. Secretary*, Mr. Rupert Smith, 38 Greenhill Gardens, Edinburgh; *Hon. Treasurer*, Mr. R. B. Johnstone, 3 Oswald Gardens, Scotstounhill, Glasgow; *Councillors*, Rev. John Taylor, B.D.; Rev. Robert Barr, M.A.; Dr. David Fyfe, M.D., F.R.C.S.E.; Capt. G. F. Scott Elliot, M.A., F.R.S.E., F.R.G.S.; Mr. Alexander Morton, M.A., B.Sc.; and Rev. W. M. Steven, B.D.

It was agreed that the British Mycological Society should be asked to take part in a joint foray in the autumn of 1925; and as that Society prefers a northern district, it was resolved that details should meanwhile be left to be mutually arranged in due course. Should the Mycological Society not see it way to fix a joint meeting, Dunkeld was selected as the place of our meeting for 1925. After the formal business was over, Dr. M. Wilson contributed notes on "The Diseases of the Silver Fir." A paper was also read by Mrs. N. L. Alcock on "Mycology and Plant Pathology," and one by Miss E. J. Cadman on "*Schistostega osmundacea* Mohr." The meeting closed after votes of thanks had been passed to the proprietors who had kindly given permission to the Society to visit their estates,

## LIST OF FUNGI, 1924.

### LOCALITIES.

1. Black Nest Wood, &c., Thornhill.
2. Mallyford Wood, Drumlanrig.
3. Capenoch, by Penpont.

*Amanita phalloides* (Vaill.) Fr. 1; *rubescens* (Pers.) Fr. 2, 3;  
*muscaria* (Linn.) Fr. 1, 2, 3.

*Amanitopsis vaginata* (Bull.) Roze. 1, 2.

*Lepiota amianthina* (Scop.) Fr. 1, 2, 3.

*Armillaria mellea* (Vahl) Fr. 1, 2, 3; *mucida* (Schröd.) Fr. 2.

*Tricholoma resplendens* Fr. 3; *albobrunneum* (Pers.) Fr. 3;  
*rutilans* (Schaeff.) Fr. 1; *terreum* (Schaeff.) Fr. 2, 3.

*Clitocybe clavipes* (Pers.) Fr. 1; *inversa* (Scop.) Fr. 2.

*Laccaria laccata* (Scop.) B. & Br. 1, 2, 3; var. *amethystina* (Vaill.)  
B. & Br. 1, 2, 3.

*Collybia radicata* (Relh.) Berk. 1; *maculata* (A. & S.) Fr. 3;  
*confluens* (Pers.) Fr. 3; *conigena* (Pers.) Bres. 1; *cirrhatia* (Schum.)  
Fr. 1; *esculenta* (Wulf.) Fr. 2; *tuberosa* (Bull.) Fr. 3; *dryophila*  
(Bull.) Fr. 2.

*Mycena rugosa* Fr. 1, 2, 3; *galericulata* (Scop.) Fr. 2, 3; *poly-*  
*gramma* (Bull.) Fr. 2; *pullata* Berk. & Clarke 1; *filipes* (Bull.) Fr.  
2; *sanguinolenta* (A. & S.) Fr. 3; *galopus* (Pers.) Fr. 1, 2, 3;  
*epipterygia* (Scop.) Fr. 1, 3; *corticola* (Schum.) Fr. 1, 2.

*Pluteus cervinus* (Schaeff.) Fr. 3.

*Leptonia serrulata* (Pers.) Fr. 2.

*Nolanea pascua* (Pers.) Fr. 1, 2, 3.

*Pholiota squarrosa* (Müll.) Fr. 2; *flammans* Fr. 1, 3.

*Inocybe rimosa* (Bull.) Fr. 1; *geophylla* (Sow.) Fr. 2, 3; *Godeyi* Gillet, 1, 2.

*Flammula sapinea* Fr. 1.

*Galera tenera* (Schaeff.) Fr. 2, 3; *hypnorum* (Schrank) Fr. 2, 3.

*Crepidotus mollis* (Schaeff.) Fr. 2, 3.

*Stropharia aeruginosa* (Curt.) Fr. 1, 2, 3; *semiglobata* (Batsch) Fr. 1, 2, 3.

*Hypholoma capnoides* Fr. 2, 3; *fasciculare* (Huds.) Fr. 1, 2, 3.

*Psilocybe semilanceata* Fr. 2, 3.

*Anellaria separata* (Linn.) Karst. 2.

*Psathyrella gracilis*, Fr. 2.

*Coprinus deliquescens* (Bull.) Fr. 1, 3; *plicatilis* (Curt.) Fr. 2.

*Bolbitius fragilis* (Linn.) Fr. 2.

*Cortinarium* (Myxaciium) *elatior* Fr. 2, 3; (*Dermocybe*) *cinnabarina* Fr. 3; (*Telamonia*) *torvus* Fr. 1; (*Hydrocybe*) *acutus* (Pers.) Fr. 1, 2.

*Paxillus involutus* (Batsch) Fr. 1, 3.

*Hygrophorus pratensis* (Pers.) Fr. 1, 2, 3; *virgineus* (Wulf.) Fr. 1, 2, 3; *laetus* (Pers.) Fr. 1, 2, 3; *ceraceus* (Wulf.) Fr. 2, 3; *coccineus* (Schaeff.) Fr. 1, 2, 3; *puniceus* Fr. 2; *chlorophanus* Fr. 2; *psittacinus* (Schaeff.) Fr. 2, 3; *unguinus* Fr. 2.

*Lactarius turpis* (Weinm.) Fr. 1; *blennius* Fr. 1; *vellereus* Fr. 1, 3; *quietus* Fr. 1, 2, 3; *glyciosmus* Fr. 1, 2; *mitissimus* Fr. 2.

*Russula nigricans* (Bull.) Fr. 1, 2, 3; *cyanoxantha* (Schaeff.) Fr. 1, 2, 3; *foetens* (Pers.) Fr. 3; *fellea* Fr. 2, 3; *emetica* (Schaeff.) Fr. 1, 2, 3; *ochroleuca* (Pers.) Fr. 1, 2, 3; *atro-purpurea* (Krombh.) Maire 1, 2, 3.



**Cantharellus** cibarius Fr. 1, 2, 3; aurantiacus (Wulf.) Fr. 2;  
tubaeformis Fr. 2.

**Nyctalis** parasitica (Bull.) Fr. 1.

**Marasmius** peronatus (Bolt.) Fr. 2, 3; androsaceus (Linn.) Fr.  
1, 3; rotula (Scop.) Fr. 1.

**Lentinus** cochleatus (Pers.) Fr. 3.

**Panus** stypticus (Bull.) Fr. 2, 3.

**Boletus** elegans (Schum.) Fr. 3; flavus With. 3; badius Fr. 3;  
variegatus (Swartz) Fr. 1, 3; chrysenteron (Bull.) Fr. 3; edulis  
(Bull.) Fr. 3; luridus (Schaeff.) Fr. 1.

**Polyporus** giganteus (Pers.) Fr. 3; betulinus (Bull.) Fr. 2; hispidus  
(Bull.) Fr. 21

**Fomes** annosus Fr. 1, 2, 3.

**Polystictus** versicolor (Linn.) Fr. 1, 2, 3.

**Poria** vaporaria (Pers.) Fr. 1, 3.

**Hydnum** repandum (Linn.) Fr. 1, 2.

**Tremellodon** gelatinosum (Scop.) Pers. 1.

**Phlebia** merismoides Fr. 1.

**Stereum** spadiceum Fr. 2, 3; sanguinolentum (A. & S.) Fr. 3; hirsutum  
(Willd.) Fr. 1, 2, 3.

**Corticium** laeve (Pers.) Quil. 2; comedens (Nees) Fr. 1.

**Clavaria** muscoides Fr. 1; cristata (Holmsk.) Fr. 3; rugosa (Bull.)  
Fr. 3; argillacea (Pers.) Fr. 1, 2; vermicularis Fr. 1, 2; fumosa  
(Pers.) Fr. 2.

**Calocera** viscosa (Pers.) Fr. 1, 2, 3; cornea (Batsch) Fr. 1, 2, 3;  
stricta, Fr. 2.

**Pistillaria** puberula, Berk. 2.

**Tremella** foliacea (Pers.) Fr. 2; lutescens Pers. 2; mesenterica  
(Retz.) Fr. 2.

**Exidia glandulosa** (Bull.) Fr. 2, 3.

**Dacryomyces stillatus** (Nees) Fr. 1, 2, 3.

**Sphaerobolus stellatus** (Tode) Pers. 1, 2.

**Lycopodon perlatum** Pers. 1.

**Phallus impudicus** (Linn.) Pers. 1, 2.

**Sclerotinia Curreyana** (Berk.) Karst., as *Sclerotium roseum* Kneiff 1.

**Hypoderma hederæ** De Not. 1.

**Nectria cinnabarina** (Tode) Fr. 1.

**Hypoxyton fuscum** (Pers.) Fr. 1.

**Dothidea sambuci** (Pers.) Fr. 1.

**Leptosphaeria Doliolum** (Pers.) Ces. and De Not. 1.

**Leptothyrium hederæ** Starb. 1.

**Discula junci** A. L. Sm. and Ramsb. 1.

## Mycology and Plant Pathology.

By Mrs. N. L. ALCOCK.

**M**YCOLOGY was one of the latest developments of Botany, and it was not until the nineteenth century that any really scientific study of the fungi was undertaken. We shall not be very far wrong if we start the history of modern mycology with the Rev. M. J. Berkeley (1803-1889), and to us plant pathologists he is a very fitting forefather. His descriptions of the various species has never been beaten, and rarely has any work approached them in minute and careful accuracy. He was a great collector, a wonderful worker in the field, and his adaptation of the work of Fries to the needs of Great Britain is known to all. We still divide our Agarics by the colour of their spores, and our ordinary classification is, in fact, on the lines of that of Mr. Berkeley, who took his largely from that of Fries.

But it is as a vegetable pathologist (as he would have called it) that we can claim him as a forerunner of the economic mycology of to-day. With the second half of the century this side of mycology began to emerge. The foundations of modern plant pathology were laid in the years subsequent to the great Irish famine, caused by the potato "murrain," as Mr. Berkeley calls it.

During the first half of the nineteenth century, the population of Great Britain had very much increased, and food-stuffs had become of great importance. The people, especially of Ireland, were depending largely on the potato as an essential food-stuff. This tuber had been brought to Europe from the mountains of South America about 1570. In its native haunts the plant always suffers a little from blight, but for nearly three hundred years the potato in Great Britain was free from this trouble. One explanation has been suggested by Dr. Pethybridge. In the days of the sailing vessel the tubers were kept in the heat of the tropics for a considerable time. Some of the potatoes doubtless were spoiled in various ways, but the mycelium of *Phytophthora infestans* will also not stand any prolonged heating. In India, where the potato is always planted in the autumn, *Phytophthora infestans*, unless brought in with fresh seed from the Himalayas, is unable to live in the tuber from one cool season to the next.

As the quicker transit through the tropics came more and more into vogue, the steamships, small and slow though they were in those days, carried the potatoes comparatively quickly across these regions, and they brought the blight still in a living condition to Great Britain. It only needed a summer favourable

to an outbreak of potato blight to cause the disease to spread, and this warm, moist weather came early in 1845. The devastating effect of this disease, and the great Irish famine connected with it, are known to all. In the ten years 1841-1851 the population of Ireland fell by 1,000,000.

One of the first sound scientific papers dealing with the "potato murrain," as he called it, was written in 1846 by the Rev. M. J. Berkeley and published in the first volume of the Journal of the Horticultural Society—now the Royal Horticultural Society.

Every kind of explanation of the trouble was put forward by those about him interested in the disaster. Mr. Berkeley says:—"Some attribute it entirely to the peculiar season, others refer it to electrical influences, to microscopic insects, to an epidemic resembling cholera, to the practice of raising potatoes constantly by the division of the tubers, to the use of animal manure or to the degeneracy of the plant itself; others again to the influence of a parasitic fungus which first attacks the leaves and ultimately the tubers . . . . I believe the fungal theory to be the true one. The decay is the consequence of the presence of the mould, and not the mould of the decay."

In this early opinion of the Rev. Miles Joseph Berkeley can be found the reason for the existence of every plant pathologist of to-day.

The study of the diseases of plants has been brought into prominence of late years by the realisation of the immense losses we incur, year by year, through their incursions. Sir John Russell this summer suggests £20,000,000 as a possible preventible loss annually due to plant disease. The various quarantines and laws other nations have instituted in an effort to control these pests bring them home at any rate to the mind of the official. America has tried to close the door altogether against all European nursery trade. She has perhaps more excuse for this than the indignant English grower always realises. Her forests have been swept by disease brought in from abroad. The White Pine, *Pinus strobus*, is a valuable forest tree in America, the total forest value of which, in the North American Continent, is reckoned at 1,100,000,000 dollars. The growth of cities and the reckless use of wood had at last awakened the Americans to the need of reafforestation, and the pine nurseries near Hamburg were called on for millions of small white pine. Although originally this was a native tree of the U.S.A., it was grown in quantity more cheaply on the Continent than was possible in the new world. With the young trees came the rust *Cronartium ribicola*, and the forests of white pine were attacked throughout



the eastern states. The loss could be reckoned in millions of dollars. The disease has spread to the great Michigan forests now, and no one can guess what the damage will be. Another disease, *Endothia parasitica*, came from China, where it was comparatively harmless, and devastated the chestnut forests of New York and Pennsylvania.

Disease may thus come in from abroad. Epidemics may start and carry devastation far and wide, but the insidious daily toll of the common diseases is perhaps more serious and certainly less regarded. It is among the common diseases of garden crops—the disfiguring scab on the apple; the smut that blackens the onion—that some help can be given by the horticultural mycologist.

It was during the war years that the Pathological Laboratory was started in London by the Board of Agriculture (now the Ministry). We were stationed at Kew. In conducting researches of this description, the assistance of a Botanic Garden is valuable to a point that I think can be realised in full only by one who, like myself, has been a good many years attached to such a garden, and then for several years has tried to do mycological work without that help. The resources of a library where the books one needs can be found, the assistance of the skilled gardener in dealing with many questions where the trouble is not primarily mycological, and the help so freely given by botanists around, are priceless, and not until their absence has been felt can their value really be estimated.

In starting work on these subjects, it is wise to realise that while knowledge is essential to practical control, economic laws will limit scientific ideals of perfection—in other words, the cure must not cost more than the total value of the crop.

Our aim is to help the grower who wants (*a*) information regarding the troubles he encounters; (*b*) advice as to the latest and best methods of prevention; and (*c*) protection against the most dangerous pests. The best means of fulfilling these three requirements will need a kind of practical research being carried out continually.

It is hoped that with the invaluable help of the scientific staff with whom we are in touch, problems may be investigated which are connected with disease, with diagnosis, with new fungi, with spraying and other methods of control, and with the reaction of the plant to the disease and to the treatment. By the assistance of botanists, systematic and physiological, some light may thus be thrown on obscure problems.

N. L. ALCOCK.

## Schistostega osmundacea Mohr.

By Miss E. J. CADMAN.

**T**HIS beautiful and very rare moss was found growing in the cleft of a large granite rock near Hey Tor on Dartmoor. The moss grows in delicate light green patches which later become reddish brown. The stems are very slender and delicate, about a quarter-of-an-inch high, and spring from a persistent, highly refractive protonema. The barren stems are bare for some distance from the base, and have two rows of vertically placed leaves above. The leaves are short and oblong in shape, pointed at the tip, nerveless, and confluent with the stem at the base. The cells of the leaf are large and rhomboidal in shape; they contain large grains of chlorophyll. The fertile stems are also bare, except for a small tuft of terminal leaves, from which springs the slender seta. The capsule is minute and almost globular in shape; it is borne erectly on the stalk and has no peristome. The male and female inflorescences occur on different plants.

*Schistostega osmundacea* is the only member of the family *Schistostegaceae*, and is therefore a very distinctive moss which it is impossible to mistake for any other, because of the distichous, confluent leaves, which give a frond-like appearance to the stem like a miniature fern, such as the Hard Fern. The most striking character is the highly refractive nature of the protonema. This power of refraction is due to the type of cell of which the protonema is composed. The protonema consists of two flat plates of tissue, only one cell deep. Each cell is lens-shaped and focuses the light directly on the chloroplasts which are collected at the base. Thus the very dim light which reaches the moss, far back in the crevice of the rock where it lives, is made use of to the very greatest extent. The light is refracted back from each cell, and gives to the plant a magnificent golden green lustre which fills the crevice with light.

### REFERENCES.

1903. Schimper. *Plant Geography*, p. 62.  
 1904. Dixon & Jamieson. *The Student's Handbook of British Mosses*, p. 283.

## List of Microfungi.

By Malcolm Wilson, D.Sc., F.R.S.E., F.L.S.

### UREDINEAE.

- Puccinia Arenariae** Wint. III on *Stellaria media*, 3.  
**P. Circaeae** Pers. III on *Circaea lutetiana*, 2.  
**P. Cirsii** Lasch II, III on *Cnicus palustris*, 2.  
**P. chrysosplenii** Grev. III on *Chrysosplenium oppositifolium*, 2.  
**P. graminis** Pers. II, III on *Avena sativa*, *Agrostis vulgaris*,  
*Agropyrum repens*, and *Dactylis glomerata*, 3.  
**P. expansa** Link. III on *Senecio Jacobaea*, 1.  
**P. holcina** Erikss. II on *Holcus mollis*, 2.  
**P. Lychnidearum** Link. III on *Lychnis dioica*, 3.  
**P. Le Monnieriana** Maire. III on *Cnicus palustris*, 2.  
**P. mirabilissima** Peck. II, III on *Mahonia aquifolia*, 2.  
**P. punctata** Link. I on *Galium saxatile*, 2.  
**P. pulverulenta** Grev. II, III on *Epilobium montanum*, 2.  
**P. sessilis** Schneid. II on *Digraphis arundinacea*, 2.  
**P. Violae** D.C. II, III on *Viola riviniana*, 2.  
**Uromyces Alchemillae** Lev. II, III on *Alchemilla vulgaris*, 2.  
**Gymnosporangium Juniperi** Link. I on *Pyrus Aucuparia*, 1, 2.  
**Phragmidium disciflorum** James. II, III on *Rosa canina*, 1.  
**Triphragmium Ulmariae** Wint. II, III on *Spiraea Ulmaria*, 2.  
**Melampsoridium betulinum** Kleb. II, III on *Betula alba*, 1.  
**Melampsorella Caryophyllacearum** Schroet. I on *Abies pectinata*,  
 2; II on *Stellaria graminea*, 2.  
**Pucciniastrum Circaeae** Speg. II on *Circaea lutetiana*, 2.  
**Thecopsora Vacciniorum** Karst. II on *Vaccinium Myrtillus*, 2.  
**Uredo Airae** Lagerh. II on *Aira caespitosa*, 2.

### USTILAGINEAE.

- Thecaphora Lathyri** Kühn. On *Lathyrus pratensis*, 1.

### ASCOMYCETES.

- Schizothyrium Ptarmicae** Desm. On *Achillea Ptarmica*, 2.  
**Lophodermium Rhododendri** Ces. On *Rhododendron ponticum*  
 var., 2.  
**L. Pinastri**, Chev. On *Pinus sylvestris*, 1.  
**L. Pinastri**, Chev., var. *conigena* Brun. On *Pinus sylvestris* cones, 3.  
**L. gilvum** Rostrup. On *Pinus sylvestris*, 1.  
**Dasyscypha subtilissima** Sacc. On *Pinus sylvestris*, 1.  
**Coryne atrovirens** Sacc., 1.  
**Aleurodiscus amorphus** Rabenh. On *Abies pectinata*, 3.  
**Sclerotinia Curreyana** Karst. On *Juncus communis*, 2.  
**Elaphomyces granulatus** Fr., 3.  
**Sphaerotheca Humuli** Burr. On *Alchemilla vulgaris*, 3.  
**Erysiphe cichoracearum** D.C. On *Arctium Lappa*, 3.  
**Claviceps purpurea** Tul. On *Phleum pratense* and *Dactylis*  
*glomerata*, 2.  
**Nectria cinnabarina**, Fr., 1.  
**Phyllachora graminis** Fuck. On *Festuca rubra*, 1.  
**Rhopoglyphus Pteridis** Sow. On *Pteris aquilina*, 1.  
**Exoascus Potentillae** Sacc. On *Potentilla Tormentilla*, 1.  
**Protomyces macrosporus** Unger. On *Aegopodium Podagraria*, 1.

## PHYCOMYCETES.

*Peronospora Trifoliorum* De Bary. On *Trifolium medium*, 1.

## FUNGI IMPERFECTI.

*Marssonina Delastrei* Sacc. On *Lychnis dioica*, 2.

*Ovularia Bistortae* Fuck. On *Polygonum Bistorta*, 2.

## Notes on Species.

*Thecaphora Lathyri*.—Recorded only once before in Britain—by me in *Trans. Brit. Mycol. Soc.*, Vol. IX., Pt. III. (1924), p. 144.

*Puccinia Le Monnieriana*.—Not previously recorded in Britain. (See description.)

*Lophodermium Rhododendri*.—Not previously recorded in Britain.

*L. Pinastri* var. *conigena*.—Var. not previously recorded in Britain.

*L. gilvum*.—Not previously recorded in Britain.

*Aleurodiscus amorphus*.—Recorded in Britain only at the foray of the British Mycol. Soc., in the Lake District, Cumberland, in 1923.—*Trans. Brit. Mycol. Soc.*, Vol. IX., Pt. I. (1923), p. 5.



## **Puccinia Le Monnieriana Maire.**

Teleutospores on *Cnicus palustris* Hoffm. Drumlanrig,  
near Thornhill, Dumfriesshire, September, 1924.

Teleutospore sori hypophyllous, seated on slightly depressed yellowish spots about 2-4 mm. in diameter, in small irregular dense groups about 2-3 mm. wide, often confluent, pulvinate, surrounded by the ruptured epidermis, dark brown; teleutospores clavate, apex rounded, truncate or acutely conical, strongly thickened (8-14), constricted at the septum, rounded or often attenuate at the base, smooth, yellowish brown 40-55 by 14-21; pedicels hyaline or brownish near the apex, thick (6-8) persistent, up to 65 long.

This species was first found by Maire (Bull. Soc. Mycol. France, T. XVI., 1900, p. 65) near Luneville, France, and has also been recorded from Portugal. Only teleutospores have been found, and this appears to be the only spore-form. The groups of sori only occur on the under surface of the leaf, those near the margin being irregularly grouped, while those nearer the midrib are often somewhat circinately arranged. The sori are strongly pulvinate and form compact masses. According to Maire the spots are bordered with violet, but this was not observed in the specimens.

This species differs from all others found on the genus *Cnicus* by the very strongly thickened wall at the apex of the spore, being most nearly approached in this character by *P. Cnicioleacei* Pers. It is also distinguished from this species by the smaller often confluent sori, and by the more strongly thickened, usually pointed, teleutospores.

Maire also records the rust in September, and it appears to be a species developing in the autumn. The specimens were found during the excursion of the Scottish Cryptogamic Society, on plants growing in a damp mixed wood.





